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Claim 4 is amended to comply with the Examiner's requirements, as well as claims 17-20, except that applicants respectfully declines to move the limitation i=1,2,...L, as suggested by the Examiner. It is believed that its location is proper because index l specifies the channel coding encoder.

Claims 4-8 were rejected under 35 USC 112, first paragraph. Applicants respectfully traverse but, in order to expedite prosecution, the "modulator" term is replaced by the term "mapper," which is clearly found in the drawings.

Claims 7, 8, 18, and 19 were rejected under 35 USC 112, second paragraph. The rejected claims are amended herein and, as amended, are believed to be in compliance with 35 USC 112.

Claims 3, 4, 15, and 6 were rejected under 35 USC 103 as being unpatentable over Calderbank, US Patent 6,127,971, in view of Naguib et al "Space-Time Coded Modulation for High Data Rate Wireless Communications," IEEE, March 3, 1997. Applicants respectfully traverse.

The Naguib et al article teaches a single block encoder (a Reed Solomon encoder) that precedes a single space-time encoder that develops a plurality of outputs. This does not suggest a plurality of Reed Solomon encoders followed by a plurality of space-time encoders. The '971 patent teaches taking a signal, dividing it into a plurality of signals, and transmitting each signal through a grouping of associated antennas. Viewed from the other end, the antennas in the transmitter are partitioned into small groups and individual space-time codes are used to transmit information from each group of antennas. This provides enhanced performance through array signal processing in the receiver.

While combining the teachings of the Naguib article suggests a Reed Solomon encoder prior to space time coding, it does not suggest an arrangement comprising a demultiplexer to create a plurality of signals and only then introducing a channel encoder that precedes a space-time encoder, as compared, for example, with .

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In light of the above amendments and remarks, applicants respectfully submit that all of the Examiner's rejections and objections have been overcome. Reconsideration and allowance are respectfully solicited.

Respectfully,
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Appendix A – Marked-up version showing changes

IN THE SPECIFICATION:

Please replace the paragraph at line 2 of page 10 with the following: --

When β_1 is set to 1, we get the following minimization criterion from equation ([40]21)

--

IN THE CLAIMS:

3. (Amended) A transmitter comprising:

a demultiplexer responsive to an applied input signal for developing a plurality of at least two signal streams, and

a like plurality of channel coding/space-time coding transmitters, each responsive to a different signal stream of said plurality of signal streams, and each carrying out channel coding followed by space-time coding.

4. (Amended) The transmitter of claim **3** where each of said channel coding/space-time coding transmitters comprises:

a channel coder of rate R_i,

a space-time encoder responsive to output signal of said channel code encoder,

[a modulator] a mapper responsive to said space-time encoder [space time-encoder],

pulse shaping circuitry responsive to said [modulator] mapper, and

at least two antennas for transmitting a space-time coded signal created by said space-time encoder mapped by said mapper [, modulated by said modulator], and conditioned by said pulse shaping circuitry.

5. The transmitter of claim **4** where said demultiplexer develops an L plurality of signal streams, where said channel coders in said L channel coding/space-time coding transmitters develop rates R_i i=1,2,...,L, that are not identical to each other.

6. The transmitter of claim **4** where said demultiplexer develops an L plurality of signal streams, where said channel coders in said L channel coding/space-time coding

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transmitters develop rates R_i i=1,2,...,L, that are such that $R_1 > R_2 > \cdots > R_L$.

7. (Amended) The transmitter of claim [3] 4 where said channel code encoder performs trellis encoding.

8. (Amended) The transmitter of claim [3] 4 where said channel code encoder performs convolutional encoding.

15. A transmitter comprising:

a demultiplexer responsive to an applied input signal for developing an L plurality of at least two signal streams, and

a like plurality of channel coding encoders, each responsive to a different one of said plurality of signal streams,

a like plurality of a space-time coding transmitters, each responsive to a different one of said channel coding encoders.

16. (Amended) The transmitter of claim **15** where each of said space-time coding transmitters comprises:

a space-time encoder responsive to input signal of said space-time coding transmitter,

a [modulator] mapper responsive to said space time-encoder,

pulse shaping circuitry responsive to said modulator, and

at least two antennas for transmitting a space-time coded signal created by said space-time encoder, [modulated] mapped by said [modulator] mapper, and conditioned by said pulse shaping circuitry.

17. (Amended) The transmitter of claim **15** where each channel coding encoder [channel coder] i=1,2,...,L in said L plurality of channel coding encoders [channel coders] develops codes at rate R_i, and the rates for different values of index i are not identical to each other.

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18. (Amended) The transmitter of claim **17** where said demultiplexer develops an L plurality of signal streams, where said channel coding encoders [channel coders in said L channel coding/space-time coding transmitters] develop rates R_i i=1,2,...,L, that are such that $R_1 > R_2 > \cdots > R_L$.

19. (Amended) The transmitter of claim **17** where said demultiplexer develops an L plurality of signal streams, where said channel coding encoders [channel coders in said L channel coding/space-time coding transmitters] develop rates R_i i=1,2,...,L, that are such that $R_1 < R_2 <$ L $< R_L$.

20. (Amended) The transmitter of claim **15** where said channel [code] coding encoder performs trellis encoding or convolutional encoding.